25757

S/024/61/000/001/011/014
E035/E117

A Device for Scanning the Edges of Patterns

followed the dots when they were moved. The scanner was originally designed for use with a quasi-topological device for reading Russian letters; but it could also be useful in a number of other fields, notably those of measuring geometrical drawings and the transmission of pictures.

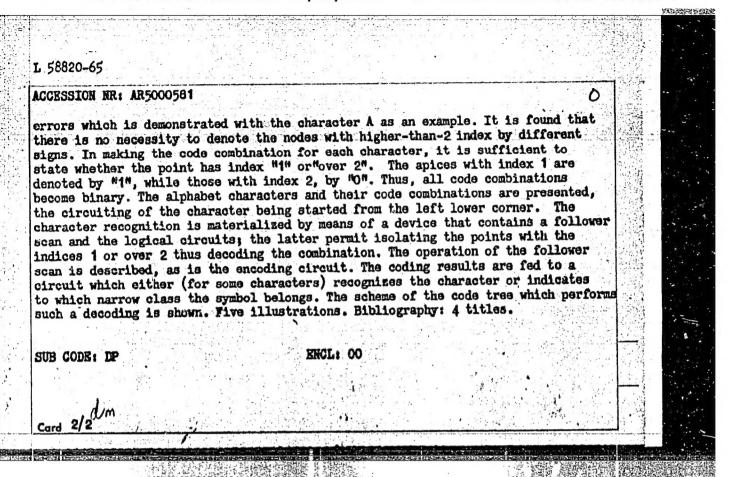Acknowledgements are made to A.A. Kharkevich for his interest in the work.

There are 5 figures and 6 references: 1 Soviet and 5 English.

SUBMITTED: May 27, 1960

Card 4/5

L 58820-65   EWT(d)/T/EED-2/EWP(1)   Pq-4/Pg-4/Pk-4   IJP(c)   GG/BB

ACCESSION NR: AR5000581                S/0271/64/000/009/B043/B043
                                        681.142.624

SOURCE: Ref. zh. Avtomat., telemekh. i vychisl. tekhn. Sv. t., Abs. 9B258   44
                          _Orlov_                                            B

AUTHOR: Garmash, V. A.; Pereverzev, V. S.; Tsirlin, V. M.

TITLE: Device for automatic recognition of printed characters

CITED SOURCE: Sb. Primeneniye tekhn. sredstv i programmir. obuch. v sredn. i
vyssh. shkole. T. 1, M., Akad. ped. nauk RSFSR, 1963, 295-300

TOPIC TAGS: pattern recognition, character recognition, Russian letter recognition

TRANSLATION: A device is proposed which permits recognizing printed and typed
characters. The problem of character recognition is reduced to establishing the
homeomorphism between the exposed pattern and a pattern of the perfect symbols by
comparing the indices of corresponding apices. The point index means the number of
branches that converge in it. The Russian alphabet characters, excluding $\phi$,
are graphs without internal apices and branches. A rule is given for consecutive
determination of indices of all graph nodes which permits obtaining a set of
numbers (indices of the nodes passed); the set represents a code of the graph in
question. The character A is considered as an example. The index-2 node is unfit
for pattern classification, because this index may result only in additional

Card 1/2

L 58820-65

ACCESSION NR: AR5000581                                                    O

errors which is demonstrated with the character A as an example. It is found that there is no necessity to denote the nodes with higher-than-2 index by different signs. In making the code combination for each character, it is sufficient to state whether the point has index "1" or "over 2". The apices with index 1 are denoted by "1", while those with index 2, by "0". Thus, all code combinations become binary. The alphabet characters and their code combinations are presented, the circuiting of the character being started from the left lower corner. The character recognition is materialized by means of a device that contains a follower scan and the logical circuits; the latter permit isolating the points with the indices 1 or over 2 thus decoding the combination. The operation of the follower scan is described, as is the encoding circuit. The coding results are fed to a circuit which either (for some characters) recognizes the character or indicates to which narrow class the symbol belongs. The scheme of the code tree which performs such a decoding is shown. Five illustrations. Bibliography: 4 titles.

SUB CODE: DP                          ENCL: 00

Card 2/2

LEBEDEV, Dmitriy Savel'yevich; TSUKKERMAN, Il'ya Ioannovich;
    GAMMASH, V.A., retsenzent; FROLOCHKIN, V.G., nauchn. red.;
    RASKINA, T.D., red.
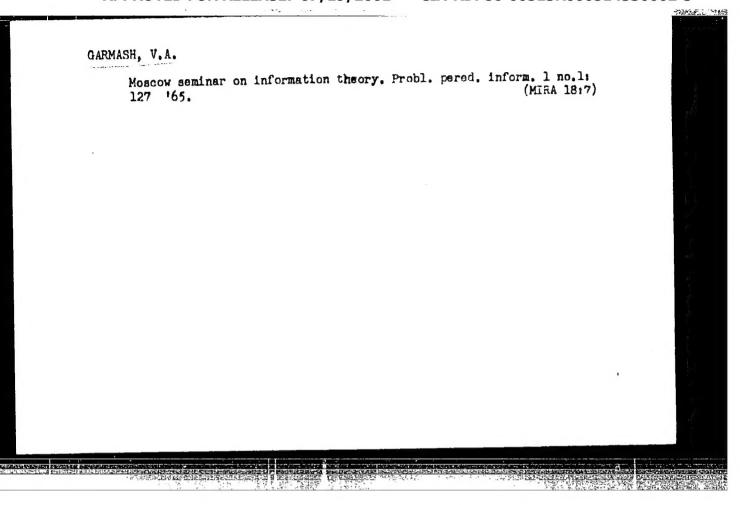
    [Television and information theory] Televidenie i teoriia
    informatsii. Moskva, Energiia, 1965. 218 p.
                                            (MIRA 18:4)

ROGINSKIY, V.N., doktor tekhn. nauk, otv. red.; GARMASH, V.A.,
kand. tekhn. nauk, zam. otv. red.

[Control and switching systems] Sistemy upravleniia i
kommutatsii. Moskva, Nauka, 1965.  136 p.  (MIRA 18:9)

1. Akademiya nauk SSSR. Institut problem peredachi informa-
tsii.

GARMASH, V.A.

Moscow seminar on information theory. Probl. pered. inform. 1 no.1:
127 '65.                                                    (MIRA 18:7)

TUMANOVSKIY, M.N., prof.; GARMASH, V.Ya.

Ultrasonic cardiography. Sov. med. 28 no.5:29-33  My '65.   (MIRA 18:5)

Kafedra ospital'noy terapii (zav. - prof. M.N.Tumanovskiy)
Voronezhskogo meditsinskogo instituta.

SOCHIVKO, Vladimir Petrovich; GARMASH, V.A., red.

[Electrical modeling of neurons] Elektricheskie modeli
neironov. Moskva, Energiia, 1965.   87 p. (Biblioteka po
avtomatike, no.148)                          (MIRA 19:1)

L 31996-66   EWT(d)/T/EWP(1)   IJP(c)

ACC NR: AP6008764          SOURCE CODE:   UR/0030/66/000/002/0152/0152

AUTHOR: Garmash, V. A. (Candidate of technical sciences)

ORG: none

TITLE: Studies in coding theory

SOURCE: AN SSR. Vestnik, no. 2, 1966, 152

TOPIC TAGS: information, theory, coding theory, Second All Union Conference

ABSTRACT: The Second All-Union Conference on Coding Theory and its applications organized by the Scientific Council on the Complex Problem of Cybernetics, the Institute of Problems of Information Transmission of the Academy of Sciences USSR, the Institute of Cybernetics of the Azerbaydzhan Academy of Sciences, and the All-Union Scientific-Technical Society of Radio Engineering and Electronics imeni A. S. Popova, held in Baku from 9 to 12 October, 1965 was attended by some 310 Soviet specialists in the theory of information transmission and similar fields. One hundred and twelve papers were presented dealing with the mathematical theory of constructing the interference-free codes, theoretical and experimental studies of the statistical characteristics of codes and information transmission channels, methods

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L 31996-66

ACC NR: AP6008764

of information transmission, re-interrogative communication systems, communication sources, methods of separating signals from noise, communication channels with quantum effects taken into account, the application of digital computers to coding and decoding of information, error-correcting codes for increasing the reliability of computers, and methods of coding theory for increasing the structural reliability of automata. At the plenary sessions, the papers by G. P. Tartakovskiy entitled "On optimum separation of information with the Gaussian a priori distribution from random signals" and by Ye. T. Maronchik entitled "On threshhold and majority decoding" were presented. It was stressed in the resolution approved by the conference that in addition to the traditional trends in coding and information transmission theory, attention must be paid to new trends, such as development of new coding methods for realizing simple decoding schemes, for studying the transmission and receiving of signals with noise in the synchronization channel taken into account, utilization of the methods of information theory in pattern recognition and in studies of the problem of increasing the reliability of automata. The importance of increasing the volume of experimental studies of communication channels and simulation of communication systems is stressed. [LK]

SUB CODE: 09/ SUBM DATE: none/

Card 2/2

S/020/60/135/004/033/037
B004/B055

AUTHORS:     Rakhovskiy, V. I., Lyubimov, A. P., and Garmash, V. M.

TITLE:       Penetration of Silver Into Tungsten

PERIODICAL:  Doklady Akademii nauk SSSR, 1960, Vol. 135, No. 4,
             pp. 906 - 908

TEXT:  The authors discuss the problem of the strength of power current
terminals. Since a high melting point and good thermal conductivity are
desirable for such contacts, repeated attempts have been made to use
alloys on the base of silver and tungsten. In this connection, penetration
of Ag into W plays an important role. Tungsten plates (0.015x0.4x1.2 cm)
were annealed in liquid silver containing radioactive $Ag^{110}$. The quartz
crucible with the sample was placed in a tube which was evacuated to $10^{-4}$
mm Hg filled with He up to somewhat  over 1 atm, and annealed at $1000^{\circ}$ C
for 8, 16, and 24 hours, and at $1080^{\circ}$ C for 4, 8, 12, and 16 hours.
Temperature was controlled by a chromel-alumel thermocouple and a ЭПВ-1

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Penetration of Silver Into Tungsten          S/020/60/135/004/033/037
                                             B004/B056

(PPTV-1) potentiometer, and regulated by an ЛАТР-1 (LATR-1) type auto-
transformer. Then, the tungsten plate was extracted from the liquid Ag,
adhering Ag was etched away by means of dilute $HNO_3$ at $40^\circ$ C in a

ТС-15м (TS-15m) type thermostat, and the activity of W was determined by
ВСП (VSP) counter. At both temperatures, a linear increase in activity
with the annealing time was observed. From this it was concluded that it
is not diffusion which takes place but another penetration process whose

rate was constant and equal to $7.62 \cdot 10^{-8}$ $g/cm^2 \cdot sec$ at $1080^\circ$ C. The acti-
vation energy of this process was 825 kcal/g-atom. The observed sharp
decrease in strength of tungsten indicated that liquid silver etches away
the grain boundaries of tungsten, and that silver atoms fill the "pores".
According to experimental data, such a process would depend linearly on
time. There are 2 figures and 3 references: 1 Soviet and 2 German.

Card 2/3

Penetration of Silver Into Tungsten          S/020/60/135/004/033/037
                                              B004/B056

ASSOCIATION:   Vsesoyuznyy elektrotekhnicheskiy institut im. V. I.
               Lenina (All-Union Electrotechnical Institute imeni
               V. I. Lenin) Moskovskiy institut stali im. I. V. Stalina
               (Moscow Steel Institute imeni I. V. Stalin)

PRESENTED:     June 22, 1960 by P. A. Rebinder, Academician

SUBMITTED:     June 14, 1960

Card 3/3

*15.2400*

AUTHORS:     Lyubimov, A.P.;  Garmash, V.M.;  Rakhovskiy, V.I.

TITLE:       Investigating the heat capacity of tungsten and copper-base cermet
             compounds

PERIODICAL:  Referativnyy zhurnal, Metallurgiya, no. 4, 1962, 41, abstract 4G269
             ("Poroshk. Metallurgiya", 1961, no. 5, 20 - 26, English summary)

TEXT:        A radiation calorimeter was used to measure the heat capacity of
Cu-W compounds during the cooling process.  The specimens were heated in a vacu-
um (about $10^{-6}$ mm Hg) to 850 - 900ºC (sintering in the solid phase) and to 1,150
- 1,250ºC (sintering in the liquid phase);  they were held at these temperatures
for 15 min and cooled at a rate of 0.75 - 1.5 degrees/sec.  In the case of Cu and
Cu-W the "heat- capacity-temperature" curves showed a number of maxima after sin-
tering, whose appearance is connected with defects in the crystal lattice of the
powders.  An anomalous behavior was also observed in compounds W +25% Cu, sin--
tered at 1,150 - 1,250ºC (heat capacity maxima were located at 410, 660, 910ºC).

                                                         R. Andriyevskiy
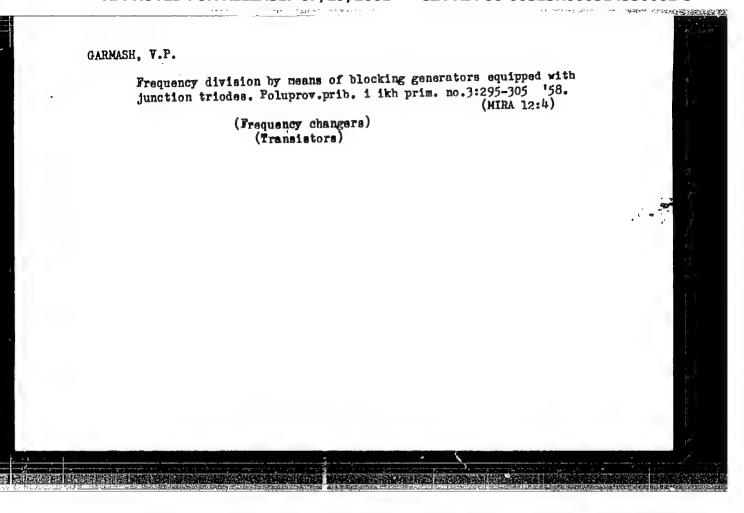[Abstracter's note:  Complete translation]

Card 1/1

GARMASH, V.M.; SOROKIN, P.S.

Testing the SGL photographic deflection measuring device in
crooked boreholes.  Razved. i okh. nedr 27 no.4:47-49 Ap '61.
(MIRA 14:5)

1. Lebedinskiy rudnik.
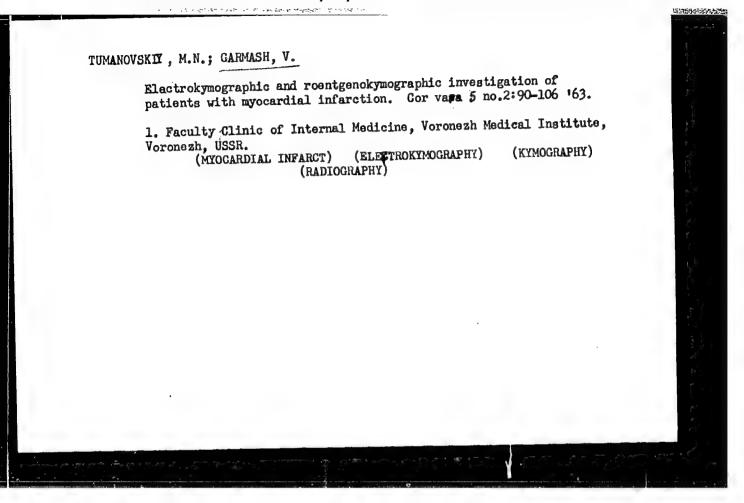(Lebedi region (Kursk Magnetic Anomaly)—Mine drainage)

GARMASH, V.P.

Frequency division by means of blocking generators equipped with junction triodes. Poluprov.prib. i ikh prim. no.3:295-305 '58.
(MIRA 12:4)

(Frequency changers)
(Transistors)

L. 05027-67    EWT(l)

ACC NR:    AR6032318          SOURCE CODE:  UR/0274/66/000/007/A009/A009

23
B

AUTHOR: Garmash, V. P.

TITLE: Highly-stable transistorized generators

SOURCE: Ref. zh. Radiotekhnika i elektrosvyaz', Abs. 7A74

REF SOURCE: Tr. uchebn, in-tov svyazi. M-vo svyazi SSSR, vyp. 27, 1965, 61-68

TOPIC TAGS: generator, transistorized generator

ABSTRACT: Special diagrams of transistorized generators with improved stability are examined.  The mathematical analysis is presented and a formula is derived for determining the effect of various parameters on the frequency of the generator. Experimental results are given.  [Translation of abstract]

SUB CODE: 09/

Card  1/1                              UDC: 621.373.52

TUMANOVSKIY , M.N.; GARMASH, V.

Electrokymographic and roentgenokymographic investigation of
patients with myocardial infarction.  Cor vasa 5 no.2:90-106 '63.

1. Faculty Clinic of Internal Medicine, Voronezh Medical Institute,
Voronezh, USSR.
            (MYOCARDIAL INFARCT)   (ELECTROKYMOGRAPHY)     (KYMOGRAPHY)
                        (RADIOGRAPHY)

TUMANOVSKIY, M.N., prof.; GARMASH, V.Ya.; NOVIKOV, Yu.G.

Electrokymographic examination of the heart in dogs in normal
conditions and in experimental myocardial infarct. Terap.arkh.
33 no.10:11-18 '61.                                          (MIRA 15:1)

1. Iz kafedry fakul'tetskoy terapii (zav. - prof. M.N. Tumanovskiy)
i kafedry operativnoy khirurgii s topograficheskoy anatomiey
(zav. - prof. T.F. Lavrova) Voronezhskogo meditsinskogo instituta.
        (HEART—INFARCTION)    (ELECTROKYMOGRAPHY)

TUMANOVSKIY, M.N.; GARMASH, V.Ya.

Electrokymographic and roentgenokymographic examination of
patients with cardiac aneurysm.  Kardilogiia 2 no.3:40-44
My-Je '62.                                          (MIRA 16:4)

1. Iz kliniki fakul'tetskoy terapii (zav. prof. M.N.Tumanovskiy)
Voronezhskogo meditsinskogo instituta.
    (HEART—EXAMINATION)    (ANEURYSMS)      (KYMOGRAPHY)

TUMANOVSKIY, M.N.; LAVROVA, T.F.; NOVIKOV, Yu.G.; GARMASH, V. Ya.

Electrokymographic investigation of the heart in dogs following excision of experimental myocardial infarction. Kardiologiia 2 no.6:22-27 N-D'62.                                    (MIRA 17:8)

1. Iz kafedry fakul'tetskoy terapii ( zav. - prof. M.N. Tumanovskiy) i kafedry topograficheskoy anatomii s operativnoy khirurgiyey ( zav. - prof. T.F. Lavrova) Voronezhskogo meditsinskogo instituta.

TYRTYSHNIKOV, I.M.; GARMASH, V. Ya.

Aldolase and transaminase activity of the blood serum and electro-
kymographic indices in myocardial infarction. Vrach. delo no.1:
20-25 Ja'64                                    (MIRA 17:3)

1. Kafedra gospital'noy terapii ( zav. - prof. M.N.Tumanovskiy)
Voronezhskogo meditsinskogo instituta.

X-ray and electrocardiographic examinations of dogs in experimental myocardial infarction and after its excision. Pat. fiziol. i eksp. terap. 8 no.6:3-9 N-D '64.
(MIRA 18:6)

1. Iz fakul'tetskoy terapevticheskoy kliniki (prof. N.N. Tumanovskiy) Voronezhskogo meditsinskogo instituta.

TUMANOVSKII, M.N., prof.; SHESTAKOV, N.M.; GARMASH, V.Ya.

Significance of electrokymography in the diagnosis of mitral defects complicated by cardiac fibrillation. Kardiologiia 5 no.2:12-16 Mr-Ap '65.          (MIRA 18:7)

1. Kafedra gospital'noy terapii (zav. - prof. M.N.Tumanovskiy) Voronezhskogo meditsinskogo instituta.

RUVINSKIY, S.M., inzhener.;STARETS, I.S., inzhener.;GARMASH, Ye.Ye., inzhener.

Modernization of gear cages on rolling mills. Stal' 16 no.9:849-951
S '56. (MLRA 9:11)

1. Leningradskoye montazhno-tekhnicheskoye byuro tresta "Soyuspodshipnik-sbyt" i Izhorskiy zavod.
        (Rolling mills)

GARMASH, Ye.N.

Broadening the scope of the use of heterodyne wavemeters.
Izm.tekh. no.2:88-89 Mr-Ap '58.            (MIRA 11:3)
(Electronic measurements)

SOV/106-58-9-4/17

AUTHOR:      Garmash, Ye. N.

TITLE:       A Single Junction Transistor RC-Oscillator (RC-generator na odinochnom kristallicheskom triode)

ABSTRACT: The usual method of constructing an RC-oscillator, using a valve, as described by Aseyev in Ref 1, requires a circuit to give a phase-shift of 180° between input and output voltages. Because the input impedance of a transistor is low the usual method of coupling the phase-shifting circuit to the transistor requires an emitter follower as used by Lyubin in Ref 2. The present article describes an alternative approach in which a network is derived which gives complete reversal at one frequency of the current entering the network. Equations (3) and (4) are expressions for the voltage-transfer and current-transfer respectively under open-circuit and short-circuit conditions. For a 3-section CR ladder network the voltage transfer at a phase shift of 180° is 1/29. It is shown by Zelyakh in Ref 3 that by reversing the direction of energy flow in the circuit (as in Fig 5) an alternative

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A Single Junction Transistor RC-Oscillator      SOV/106-58-9-4/17

form of circuit (shown in Fig 6) can be derived in which
the current transfer at the phase-reversal frequency is
also 1/29.    By using more meshes in the circuit and
grading the impedance values (as in Fig 7) the attenuation
may be made smaller.  The loss in this last network for
example is only 8.62 times, when the grading ratio is 2.
A practical circuit using a type 116B transistor is shown
in Fig 8 with component values as given in the last
section of the text.  The voltage supply is 25V, and the
element values have a tolerance of 5%.   The calculated
frequency of oscillation is 125 c/s and the experimentally
measured value is 122 c/s.   The output voltage is
typically 20V peak-to-peak.   There are 8 figures and
4 references, all Soviet.

SUBMITTED: February 3, 1958

Card 2/2

AUTHOR:      Garmash, Ye.N., Member of the Association      SOV/108-13-7-6/14

TITLE:       On the Analysis of Circuits With Semiconductor Triodes
             (K analizu skhem s poluprovodnikovymi triodami)

ABSTRACT:    A method developed by V.P.Sigorskiy for the analysis of circuits
             with electron tubes is described (Refs 1 and 2). The application
             of this method (Refs 3 and 4) for the analysis of circuits with
             semiconductor triodes makes it possible to determine the neces-
             sary ratios for them without having to set up an equivalent cir-
             cuit. For the analysis of circuits with semiconductor triodes it
             is necessary to find the matrix of the semiconductor triode which
             is supplemented by the addition of insulated nodes up to a
             $(n + 1)$-pole. The analogous matrix for an electron tube is dealt
             with (Refs 1, 2 and 5). The theoretical basis of the method
             mentioned is given (Ref 5). At present three parameter systems:
             Y, Z and H (Refs 6, 7 and 8) are being used for the analysis of
             circuits with semiconductor triodes. The application of the
             method developed by Sigorskiy for the analysis of circuits with
Card 1/2     semiconductor triodes without previously going over to equivalent

On the Analysis of Circuits With Semiconductor Triodes        SOV/108-13-7-6/14

circuits of the semiconductor triode are investigated. The application of this method is illustrated on the basis of an analysis of the two-cascade amplifier. There are 4 figures, and 8 references, 7 of which are Soviet.

SUBMITTED:    March 4, 1957

ASSOCIATION:    Vsesoyuznoye nauchno-tekhnicheskoye obshchestvo radiotekhniki i elektrosvyazi im. A.S. Popova (All-Union Scientific-technical Association for Radio Engineering and Electrical Communications im. A.S. Popov)

1. Triode circuits--Analysis    2. Semiconductors--Applications

Card 2/2

SOV/106-59-6-8/14

AUTHOR:     Garmash, Ye.N.

TITLE:      The "Infinite-Attenuation" Frequency of Low and High-
            Frequency RC Filters (Chastota 'beskonechnogo zatukhaniya'
            v fil'trakh verkhnikh i nizhnikh chastot na RC)

PERIODICAL: Elektrosvyaz', 1959, Nr 6, pp 59-64 (USSR)

ABSTRACT:   At a particular frequency the output voltage of the usual
            three-section RC filter is 180° out of phase with respect
            to the input voltage and reduced in amplitude. If, at
            this frequency, a fraction of the input voltage, equal to
            the output voltage, is applied without change of phase to
            the output terminals of the filter, then the output
            voltage is cancelled. The frequency at which the net
            output voltage is zero, is called the "infinite-
            attenuation frequency". Figs 1 and 2 show such filter
            circuits for high and low frequencies respectively. The
            generalised circuit is given in Fig 3. The generalised
            circuit is analysed by the method proposed by
            V.P. Sigorskiy (Refs 2,3). To find the frequency-
            attenuation characteristic of the filter, it is necessary
            to consider the modulus of the element $a_{11}$ of the
            general matrix of the four-terminal network of Fig 3.

Card 1/4    This element $a_{11}$ can be put in the following form:

The "Infinite-Attenuation" Frequency of Low and High-Frequency RC Filters

$$a_{11} = \frac{|Y|_{11}}{|Y|_{1m}} \qquad (1)$$

where $1$ is the input point and $m$ the output point. The general expression for the attenuation coefficient $a_{11}$ is given in Eq (3). The parameters of the high-frequency filter (Fig 1 and Eqs (4) - (7)) are substituted in the general expression (Eq (3)), giving Eq (8). To find the infinite-attenuation frequency $\omega_0$, the real and imaginary parts of the denominator are equated to zero (Eqs (9), (10)). The solution then gives:

$$\omega_0 = \frac{1}{\sqrt{4\frac{R_3}{R_2} + 6}} \cdot \frac{1}{C_1 R_2} \qquad (11)$$

providing that

$$R_4 = \frac{R_2}{4\left(\frac{R_3}{R_2}\right) + 29\left(\frac{R_2}{R_3}\right) + 23} \qquad (12)$$

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The "Infinite-Attenuation" Frequency of Low and High-Frequency RC Filters

After substitution of Eq (11) and Eq (12) in (8), an expression for the attenuation coefficient is obtained (Eq (13)). The author then considers three particular cases:

1) $R_3 = \dfrac{R_2}{2}$ ,     2) $R_3 = R_2$,     3) $R_3 = 2R_2$

The procedure is repeated for the low-frequency filter (Fig 2). Providing that

$$C_4 = 4\,\frac{C_2^2}{C_3} + 23C_2 + 29C_3 \tag{29}$$

is met, then the infinite attenuation frequency is

$$\omega_0 = \sqrt{4\,\frac{C_2}{C_3} + 6 \quad \frac{1}{C_2 R_1}} \tag{30}$$

Card 3/4 and the attenuation coefficient is given by Eq (31).

SOV/106-59-6-8/14

The "Infinite-Attenuation" Frequency of Low and High-Frequency RC Filters

Three particular cases are considered:

1) $C_3 = \dfrac{C_2}{2}$ ,    2) $C_3 = C_2$,    3) $C_3 = 2C_2$ .

There are 5 figures and 3 Soviet references.

SUBMITTED:    May 8, 1957

Card 4/4

0537

SOV/106-59-8-4/12

AUTHORS:    Aleksandrov, A.I. and Garmash, Ye.N.

TITLE:    Analysis of Semiconductor Triode Oscillator Circuits

PERIODICAL:    Elektrosvyaz', 1959, Nr 8, pp 31 - 37 (USSR)

ABSTRACT:    In the analysis of oscillators, it is usual to obtain an
expression for the open-loop gain of the amplifier stage;
the condition for self-oscillation is then found from the
real part of the expression and the oscillation frequency
from the imaginary part. This method is suitable for valve
oscillators which have high input impedances but has
limitations for semiconductor triode oscillators having low
input impedances. The article investigates these limi-
tations and the inaccuracies involved.
The basic oscillator equation is first established by
considering the circuit as a four-terminal network, the
output terminals of which are connected to the input
terminals (Figure 1). Such a circuit is analytically
described by the matrix equation:

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SOV/106-59-8-4/12

Analysis of Semiconductor Triode Oscillator Circuits

$$\left\| \begin{matrix} \dot{U}_1 \\ \dot{I}_1 \end{matrix} \right\| = \left\| \begin{matrix} A_{11} & A_{12} \\ A_{21} & A_{22} \end{matrix} \right\| \cdot \left\| \begin{matrix} \dot{U}_2 \\ \dot{I}_2 \end{matrix} \right\| \qquad (1)$$

and, with the feedback loop closed, the basic equation reduces to:

$$A_{11} + A_{22} - |A| - 1 \leqslant 0 \qquad (7)$$

where

$$|A| = A_{11} A_{22} - A_{12} A_{21} \quad .$$

In the simplest form, the oscillator circuit can be considered as two four-terminal networks connected in cascade (Figure 2):  the first is active (a semiconductor triode) and the second, representing the feedback

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05372
SOV/106-59-8-4/12
Analysis of Semiconductor Triode Oscillator Circuits

connection, is passive. (The positions of the networks can be reversed without affecting the argument.) The determinant $|A|$ is equal to the product of the determinants of the matrices of the separate four-terminal networks:

$$|A| = |a'| \cdot |a''| \qquad (8)$$

and, considering the determinant of the passive network matrix zero, Expression (7) becomes:

$$A_{11} + A_{22} - |a'| - 1 \leqslant 0 \qquad (9) .$$

This latter expression is used to analyse both common-emitter and common-base or common-collector circuits.

Card3/5

05372

SOV/106-59-8-4/12

Analysis of Semiconductor Triode Oscillator Circuits

For common-emitter circuits, the exact basic oscillator equation is:

$$A_{11} + A_{22} - 1 + \frac{Y_{12}}{Y_{21}} \leqslant 0 \qquad (12)$$

which can be simplified to the approximate equation:

$$A_{11} + A_{22} - 1 \leqslant 0 \qquad (14) .$$

It is then shown analytically that the approximate equation for an oscillator does not differ significantly from the exact equation for common-emitter circuits and, consequently, all the design formulae obtained by use of the approximate equation are admissible but, for circuits with a common-base or common-collector, the approximate

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05372

SOV/106-59-8-4/12

Analysis of Semiconductor Triode Oscillator Circuits

equation differs considerably from the exact, and cannot
be used for analysis and design of such circuits.
There are 9 figures and 6 references, of which 5 are
Soviet and 1 German.

SUBMITTED:    October 2, 1958

Card 5/5

84372
S/106/60/000/006/005/013
A169/A026

$9.2586$

AUTHOR:     Garmash, Ye.N.

TITLE:      The Ultimate Values of Resistances of Ladder-Network RC-Oscillators

PERIODICAL: Elektrosvyaz', 1960, No. 6, pp. 24 - 27

TEXT:       The author discusses conditions for the self excitation of ladder-network RC-oscillators (tsepochechnyy RC-generator) taking into account the output resistance of the amplifier.  According to V.G. Kriksunov (Ref. 1), it is usually assumed that the input resistance of the phasing network (faziruyushchaya tsepochka) is considerably greater than the output resistance of the amplifier stage.  For this reason, the effects of the plate resistance $R_a$ and the plate load resistance are usually not taken into account in the formulas for determining the frequency and the conditions at which a self-excitation will originate. The author derives a general formula for the self-excitation conditions of a ladder-network RC-oscillator   $- a_{11} - a_{21}R_a \measuredangle S \cdot R_a$   (4), where $a_{11}$, $a_{21}$ are amplifier matrix elements in the formula of Ye.V. Zelyakh (Ref. 3).  The author uses the above condition of self-excitation in discussing three and four-element ladder-network RC-oscillators.  He obtained formulas which make it possible to

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S/106/60/000/006/005/013
A169/A026

The Ultimate Values of Resistances of Ladder-Network RC-Oscillators

determine the boundary values of resistance in phasing networks and whose reduc-
tion will not cause a self-excitation of the RC-oscillator. The formulas obtain-
ed for the frequency coincide with the formulas given by Townsend (Ref. 2), who
also considered in his calculations the effect of amplifier parameters. The au-
thor presents a graph (Fig. 3) in which he shows the ratio $R_a/R_{min}$ in dependence
on the amplification factor $S \cdot R_a$. [ABSTRACTER'S NOTE: Subscript min (minimum)
is a translation of the original мин(minimum)]. A comparison of the curves (Fig.
3) for networks "R-parallel" and "C-parallel" (tsepochki R-parallel' i C-paral-
lel') shows that the RC-oscillator with the "C-parallel" network is excited at
lower $R/R_a$ value than with the "R-parallel" network at conditions otherwise e-
qual. Beginning with an amplification factor equal or higher than 38, the RC-
oscillator with a four-element "R-parallel" network is excited at greater $R/R_a$
values than the RC-oscillator with a three-element "C-parallel" network. At an
amplification factor greater than a determined value (which is different for
various networks), the resistance of the phasing network can be selected smaller
than the resistance $R_a$. In calculating RC-oscillators, the value of the resist-
ance R must be selected in such a way that, at a selected amplification factor,

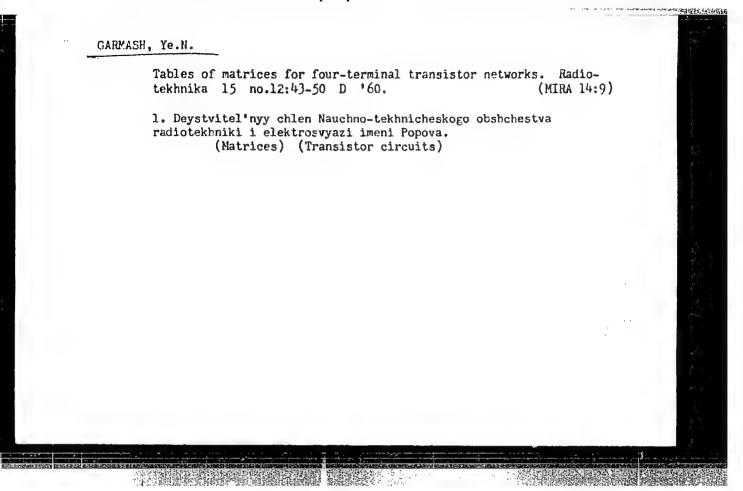Card 2/3

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S/106/60/000/006/005/013
A169/A026

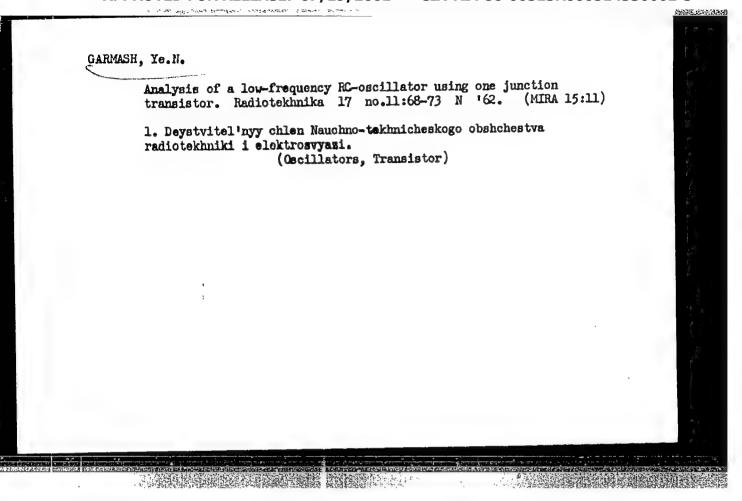The Ultimate Values of Resistances of Ladder-Network RC-Oscillators

the ratio $R/R_a$ is greater than the minimum value $R_{min}/R_a$, determined from the graph (Fig. 3).   There are 3 figures and 5 references:   4 Soviet and 1 English.

SUBMITTED:    October 27, 1959

Card 3/3

GARMASH, Ye.N.

Tables of matrices for four-terminal transistor networks.  Radio-
tekhnika  15  no.12:43-50  D  '60.                    (MIRA 14:9)

1. Deystvitel'nyy chlen Nauchno-tekhnicheskogo obshchestva
radiotekhniki i elektrosvyazi imeni Popova.
          (Matrices)  (Transistor circuits)

GARMASH, Ye.N.

Analysis of a low-frequency RC-oscillator using one junction
transistor. Radiotekhnika 17 no.11:68-73 N '62.   (MIRA 15:11)

1. Deystvitel'nyy chlen Nauchno-tekhnicheskogo obshchestva
radiotekhniki i elektrosvyazi.
                    (Oscillators, Transistor)

AKULOV, I.I.; BARZHIN, V.Ya.; VALITOV, R.A.; GARMASH, Ye.N.; KUCHIN,
        L.F.; NAYDEROV, V.Z.; PUTSENKO, V.V.; SEMENOVSKIY, V.K.;
        SIMONOV, Yu.L.; TARASOV, V.L.; TEREKHOV, N.K.; SHEVYRTALOV,
        Yu.B.; YUNDENKO, I.N.; CHISTYAKOV, N.I., otv. red.; KOKOSOV,
        L.V., red.; TRISHINA, L.A., tekhn.red.

    [Theory and design of principal radio circuits using transistors]
    Teoriia i raschet osnovnykh radiotekhnicheskikh skhem na transi-
    storakh. [By] I.I.Akulov i dr.  Moskva, Sviaz'izdat, 1963. 452 p.
                                                    (MIRA 16:8)

        (Transistor circuits)   (Electronic circuits)

AKULOV, I.I.; BARZHIN, V.Ya.; VALITOV, R.A.; GARMASH, Ye.N.;
KUCHIN, L.F.; NAYDEROV, V.Z.; PUTSENKO, V.V.;
SEMENOVSKIY, V.K.; SIMONOV, Yu.L.; TARASOV, V.L.;
TEREKHOV, N.K.; SHEVYRTALOV, Yu.B.; YUNDENKO, I.N.:
CHISTYAKOV, N.I., prof., otv. red.; KOKOSOV, L.V., red.

[Theory and design of basic radio circuits using
transistors] Teorila i raschet osnovnykh radiotekhniche-
skikh skhem na tranzistorakh. Moskva. Sviaz', 1964.
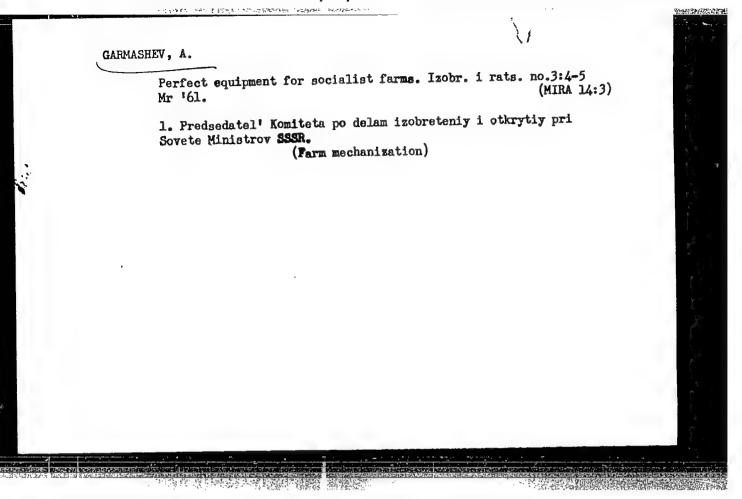454 p.                                    (MIRA 18:8)

RUBAN, Pavel Ivanovich; GARMASH, Yevdokiya Yevdokimovna; TAL'SKIY, D.A.,
red.; MURASHOVA, V.A., tekhn. red.

[Textbook for the solution of problems in analytic geometry]
Rukovodstvo k resheniiu zadach po analiticheskoi geometrii.
Moskva, Vysshaia shkola, 1963.  313 p.          (MIRA 16:8)
                    (Geometry, Analytic)

GARMASHEV, A.

Perfect equipment for socialist farms. Izobr. i rats. no.3:4-5
Mr '61.                                              (MIRA 14:3)

1. Predsedatel' Komiteta po delam izobreteniy i otkrytiy pri
Sovete Ministrov SSSR.
                    (Farm mechanization)

GARMASHEV, A.F.

Improve the administrative handling of inventions and efficiency suggestions. Izobr. v SSSR 1 no.1:5-9 Jl '56.          (MLRA 10:3)

1. Predsedatel' Komiteta po delam izobreteniy i otkrytiy pri Sovete Ministrov SSSR.
          (Inventions) (Suggestion systems)

*GARMASHEV, ALEKSANDR Fomich*

Call Nr: T26.R9G3

AUTHOR          Garmashev, Aleksandr Fomich (Chairman of the Committee on
                Inventions and Discoveries at the Council of Ministers of the
                USSR)

TITLE:          Development of Inventions in the USSR (Izobretatel'stvo v SSSR)

PUB. DATA:      Gosudarstvennoye izdatel'stvo politicheskoy literatury, Moscow,
                1957, 147 p., 25,000 copies.

ORIG. AGENCY:   None given

EDITOR:         Editor: Kostin, N.;   Tech. Ed.: Mukhin, Yu.;   Art. Ed.: Sergeyev, S.;
                Proofreader: Viflyayeva, N.

PURPOSE:        The monograph by summarizing and emphasizing the merits of past
                inventions and discoveries in the USSR is designed to stimulate
                and encourage efforts in that direction.

COVERAGE:       A general review of the most important inventions in Russia, before
                and particularly  after the Revolution is presented.  In this
                connection, many names of inventors, developers, engineers, scientists,
                etc. are given.  In addition, organizations for utilization and patenting
Card 1/2        of inventions (such as Bureaus for Rationalization and Inventions)

Development of Inventions in the USSR.   (Cont.)

within various plants, technical councils within ministries, etc. and their functions are described. Specific tasks for inventors in various branches of industry are outlined. There are no references.

## TABLE OF CONTENTS

Card 2/2

GARMASHEV, A.F.

Soviet delegation in the German Democratic Republic.  Izobr.v SSSR
2 no.5:31-33 My '57.                                    (MLRA 10:7)

1. Predsedatel' Komiteta po delam izobreteniy i otkrytiy pri Sovete
Ministrov SSSR.
                (Germany, East--Patent laws and legislation)

GARMASHEV, A.F.

Forty years of inventing in the U.S.S.R. Izobr.v SSSR 2 no.11:
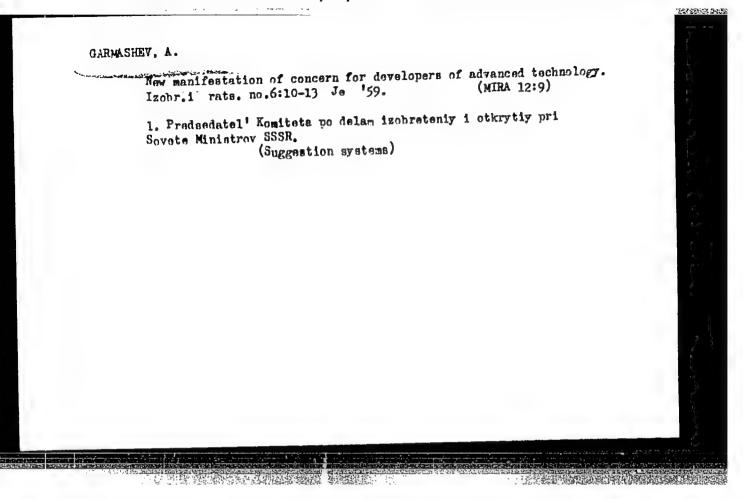3-10 N '57.
(MIRA 10:10)

1.Predsedatel' Kometeta po delam izobreteniy i otkrytiy
pri Sovete Ministrov SSSR.
(Inventions) (Efficiency, Industrial)

GARMASHEV, A.

Results of invention and improvement activities in the USSR in 1956.  Tr. from the
Russian.   p. 89.

(Sbirka Vynale,u.   Vol. 6, no. 5, May 1957.  Praha, Czechoslovakia)

SO:  Monthly List of East Euro ean Accessions (EEAL) LC, Vol. 6, no. 10, October 1957. Uncl.

GARMASHEV, A.

New manifestation of concern for developers of advanced technology.
Izohr.i rats. no.6:10-13 Je '59.                (MIRA 12:9)

1. Predsedatel' Komiteta po delam izobreteniy i otkrytiy pri
Sovete Ministrov SSSR.
                    (Suggestion systems)
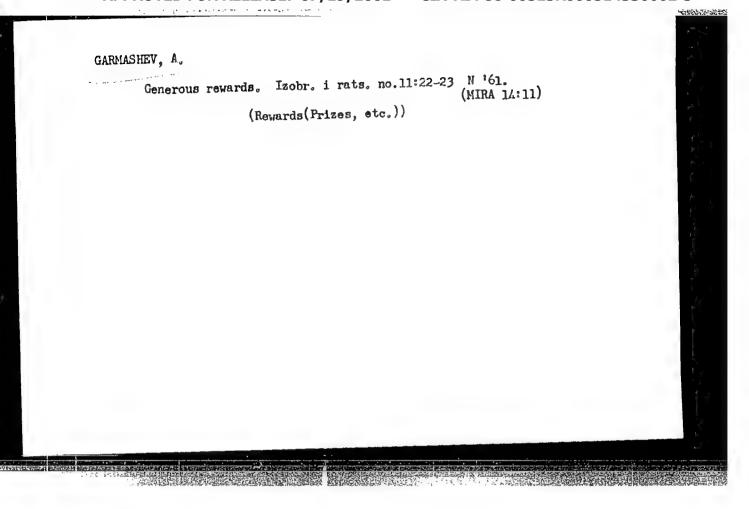
GARMASEV, A. F. [Garmashev, A. F.]

Honoring and militant task. Ujit lap 13 no.11:3-4   Je '61.
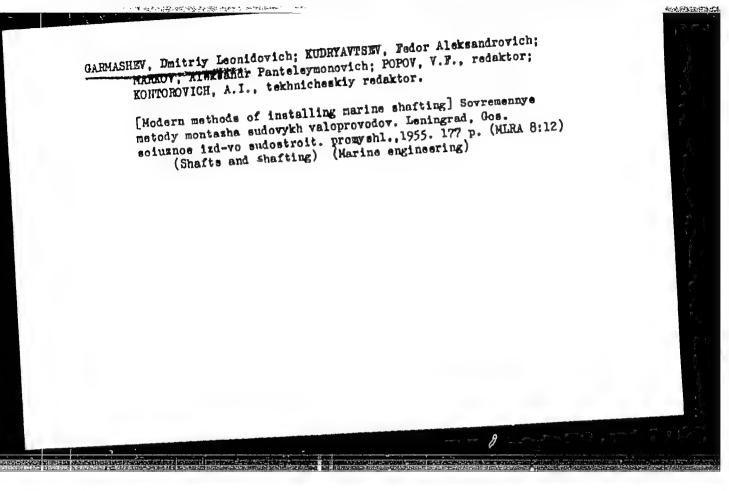
1. A Szovjetunio Minisztertanacsa mellett mukodo Talalmanyi es Felfedezesugyi Bizottsag elnoke.

(Russia--Inventions)   (Russia--Patents)

GARMASHEV, A.

Generous rewards. Izobr. i rats. no.11:22-23 N '61.
(MIRA 14:11)

(Rewards(Prizes, etc.))

168T32

GARMASHEV, D. L.

USSR/Engineering - Shipbuilding, Sub-          Jan/Feb 47
marines

"Launching of Submarines on a Single Slide," D. L.
Garmashev, Engr

"Sudostroyeniye" No 1, pp 4-8

Describes use of large shipyards to assembly submarine
sections and launch large submarines of 1,600 tons
displacement (done in Germany for mass production of
submarines). Slips described could accommodate two
submarines on each launching slide. Sections of sub-
marines, made at different plants, were delivered to
shipyard on special pontoons.

168T32

GARMASHEV, Dmitriy Leonidovich; KUDRYAVTSEV, Fedor Aleksandrovich; MAMOV, Aleksandr Panteleymonovich; POPOV, V.F., redaktor; KONTOROVICH, A.I., tekhnicheskiy redaktor.

[Modern methods of installing marine shafting] Sovremennye metody montazha sudovykh valoprovodov. Leningrad, Gos. soiuznoe izd-vo sudostroit. promyshl.,1955. 177 p. (MLRA 8:12)
(Shafts and shafting) (Marine engineering)

GARMASHEV, D.L., kand.tekhn.nauk.

Requirements from expanding properties of couplings in main
marine turbine joints with reduction gear.  Sudostroenie 23
no.8:49-54 Ag '57.                                (MIRA 10:11)
                        (Marine turbines)

GARMASHEV, D.L., Doc Tecn Sci — (diss) "Theoretical ~~control~~ *substantiation*
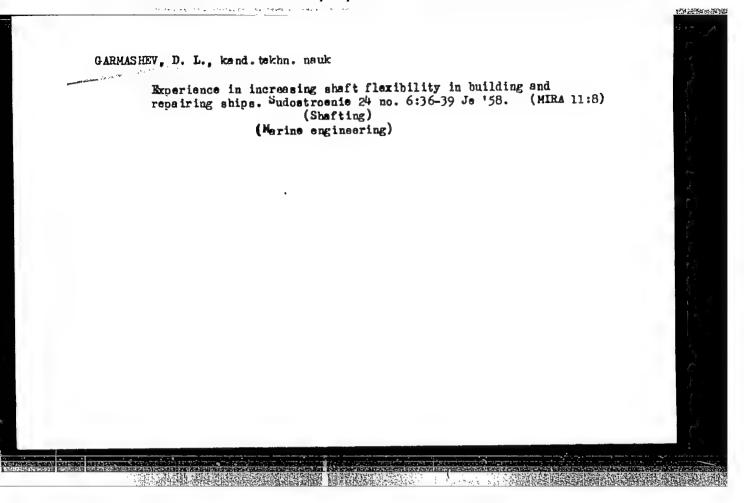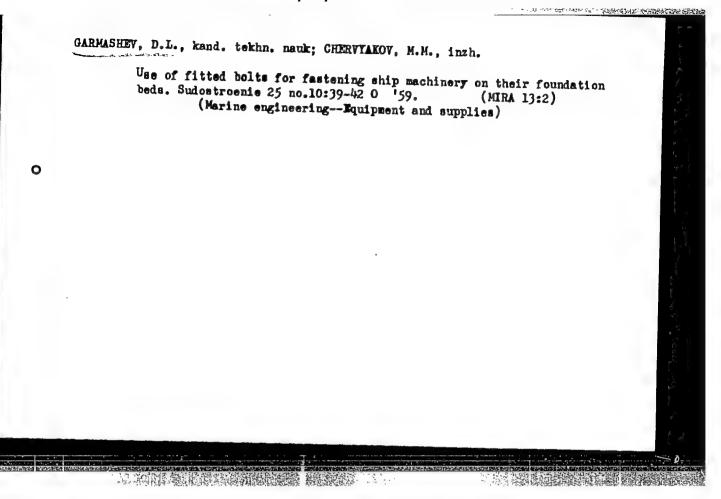of the ~~choice~~ of technology ~~in~~ the align~~ment of~~ ship drive
shafts." /Mos/, 1959, 21 pp with drawings (State Committee of
the Council of Ministers ~~of the~~ USSR for Ship ~~Construction~~.
Central Sci Res Inst) 120 copies (KL, 28-59, 125)

GARMASHEV, D. L., kand. tekhn. nauk

Experience in increasing shaft flexibility in building and repairing ships. Sudostroenie 24 no. 6:36-39 Je '58.   (MIRA 11:8)
(Shafting)
(Marine engineering)

GARMASHEV, D.L., kand. tekhn. nauk; CHERVYAKOV, M.M., inzh.

Use of fitted bolts for fastening ship machinery on their foundation beds. Sudostroenie 25 no.10:39-42 O '59.        (MIRA 13:2)
(Marine engineering--Equipment and supplies)

GARMASHEV, D.L., kand.tekhn.nauk

Propeller shaft fitting in building small vessels without use
of mobile boring machines. Sudostroenie 25  no.12:41-45  D
'59.                                        (MIRA 13:4)
       (Shafting)  (Shipfitting--Equipment and supplies)

GARMASHEV, Dmitriy Leonidovich, kand. tekhn. nauk; KUDRYAVTSEV, Fedor Aleksan-
drovich, inzh.; MARKOV, Aleksandr Panteleymonovich, inzh.; GERSHTEYN,
Yu.S., inzh., retsenzent; ROKHLIN, A.G., kand. tekhn. nauk, retsen-
zent; ZHIDYAYEV, O.A., nauchnyy red.; OZEROVA, Z.V., red.; KRYAKOVA,
D.M., tekhn. red.

[Modern methods of assembling marine shafting] Sovremennye metody
montazha sudovykh valoprovodov. Izd.2., ispr. i dop. Leningrad,
Gos. soiuznoe izd-vo sudostroit. promyshl., 1961. 280 p.
(MIRA 14:10)

(Shafting)   (Ships--Equipment and supplies)

GARMASHEV, D.L., kand.tekhn.nauk

Criteria of the quality of centering ship shafting.  Sudostroenie
30  no.2:62-63  F  '64.

(MIRA 17:4)

GARMASHEV, D., kand. tekhn. nauk

Improving the operating reliability of propeller shafts on large
vessels. Mor. flot 25 no.9:28-30  S '65.          (MIRA 18:9)

KLOKMAN, V.R.; GARMASHEV, Yu.M.

Crystallization coefficient of radium in nitrate systems. Radio-
khimiia 1  no.1:26-31 '59.                                    (MIRA 12:4)
          (Radium--Crystals)        (Nitrates)

LAPUTI, T.A. [Laputi', T.A.]; GARMASHEVA, L.F. [Farmasheva, L.F.]

Some characteristics of the change in the depth of the occurrence of oil and bitumens in the Devonian sediments of the Pripet Valley. Vestsi AN BSSR. Ser. fiz.-tekh. nav. no.4:92-99 '63.

(MIRA 17:12)

MALININA, I.L.

"Concerning the Role of the Nervous System in the Mechanism of the Regulation of Sexual Functions,"

Thesis on the reports of the session of the Institute of Obstetrics and Gynecology, USSR Academy of Sciences, October 1949.

SO: Akush Ginek, Vol 19, No 1, 1951.

GARMASHEVA, N.L.

CA

The ascorbic acid balance in patients with maxillo-facial wounds. M. S. Am and N. L. Garmasheva. *Stomalogiya* 1944, No. 4, 32-5.—The ground food given to such patients is usually low in ascorbic acid. They should be given the vitamin intravenously.    H. M. Leicester

GARMASHEVA, N. L.

Garmasheva, N. L. - "On the effect of sympathectomy on the condition of infectious inflammation of the uterus", In the collection: Mekhanizm patol. reaktsiy, Issues 11-15, Leningrad, 1949, p. 112-16, - Bibliog: 6 items.

SO: U-4329, 19 August 53, (Letopis 'Zhurnal 'nykh Statey, No. 21, 1949).

GARMASHEVA, N. L.

Garmasheva, N. L.  "Data for the study of the mechanism of anaphylactic shock", In the
collection:  Mekhanizm patol. reaktsiy, Issues 11-15, Leningrad, 1949, p. 161-65.

SO:  U-4392, 19 August 53, (Letopis 'Zhurnal 'nykh Statey, No 21, 1949).

GARMASHEVA, N.L.

Reflex mechanism in the onset of labor. Akush.gin. no.2:3-9 Mar-Apr 51.
(CLML 20:8)

1. Of the Pathophysiological Laboratory of the Institute of Obstetrics
and Gynecology (Director—Prof. A.P. Nikolayev, Corresponding Member
of the Academy of Medical Sciences USSR) of the Academy of Medical
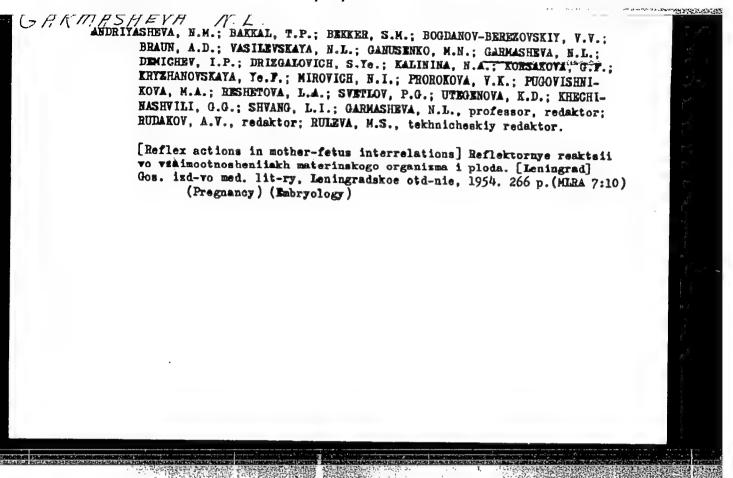Sciences USSR.

GARMASHEVA, N.L.

KRYZHANOVSKAYA, Ye.F.; GARMASHEVA, N.L., zaveduyushchiy; NIKOLAYEV, A.P., direktor; AYRAPET'YANTS, E.Sh., zaveduyushchiy; BYKOV, K.M., akademik, direktor.

Data for the characteristics of uterine reception. Vop.fiziol.int. no.1:265-272 '52.

(MLRA 6:8)

1. Laboratoriya patofiziologii TSentral'nogo instituta akusherstva i ginekologii Akademii meditsinskikh nauk SSSR (for Garmasheva). 2. TSentral'nyy institut akusherstva i ginekologii Akademii meditsinskikh nauk SSSR (for Nikolayev). 3. Laboratoriya interotseptivnykh uslovnykh refleksov Instituta fiziologii im. I.P.Pavlova Akademii nauk SSSR (for Ayrapet'yants). 4. Institut fiziologii im. I.P.Pavlova Akademii nauk SSSR (for Bykov).

(Nervous system) (Uterus)

GARMASHEVA  N. L.

ANDRIYASHEVA, N.M.; BAKKAL, T.P.; BEKKER, S.M.; BOGDANOV-BEREZOVSKIY, V.V.;
BRAUN, A.D.; VASILEVSKAYA, N.L.; GANUSENKO, M.N.; GARMASHEVA, N.L.;
DEMICHEV, I.P.; DRIZGALOVICH, S.Ye.; KALININA, N.A.; KORSAKOVA, G.F.;
KRYZHANOVSKAYA, Ye.F.; MIROVICH, N.I.; PROROKOVA, V.K.; PUGOVISHNI-
KOVA, M.A.; RESHETOVA, L.A.; SVETLOV, P.G.; UTEGENOVA, K.D.; KHECHI-
NASHVILI, G.G.; SHVANG, L.I.; GARMASHEVA, N.L., professor, redaktor;
RUDAKOV, A.V., redaktor; RULEVA, M.S., tekhnicheskiy redaktor.

[Reflex actions in mother-fetus interrelations] Reflektornye reaktsii
vo vzaimootnosheniiakh materinskogo organizma i ploda. [Leningrad]
Gos. izd-vo med. lit-ry. Leningradskoe otd-nie, 1954. 266 p.(MIRA 7:10)
(Pregnancy) (Embryology)

GARMASHEVA, N. L.

USSR/General Biology. Individual Development                B-4

Abs Jour : Ref Zhur - Biol., No 22, 1958, No 98915

Author    : Garmasheva N.L.
Inst      : Leningrad University
Title     : Participation of Mother's Organism in Embryonic
            Development

Orig Pub : V sb.: Probl. sovrem. embriologii, L., Un-t,
           1956, 256-261

Abstract : On the basis of the author's own observations and
           those reported in the literature, the progravid-
           ic changes which create conditions of the fetus
           development in mother's organism are considered;
           these changes assure the preparation for the
           placentation of the fetus and adaptive reactions
           of the mother's organism during pregnancy. --
           R.A. Chapnitskaya

Card      : 1/1

10

GARMASHEVA, N.L., Prof.,

"Complex Research at the Institute of Obstetrics and Gynecology of the Academy of Medical Sciences USSR in Conjunction with Various Laboratories," This study included the effect of radiation on pregnant animals irradiated by X rays on embryogenesis and on the condition of the fetus. In addition, the professor considered certain problems of the mechanism of the injury of lthe fetus.
Paper presented at the 11th LSession of AMS USSR on Trauma, April 1957.

SO: SUM. 1644

GARMASHEVA, N.L.

Some problems in the physiology and pathophysiology of pregnancy.
Vest. AMN SSSR 12 no.4:46-61 '57.                     (MIRA 10:10)

1. Institut akusherstva i ginekologii AMN SSSR, Leningrad.
   (PREGNANCY)

GARMASHEVA, Natal'ya Leonidovna, red.

[Pathophysiology of intratubal development] Patofiziologiia
vnutriutrobnogo razvitiia. Leningrad, Medgiz, 1959.. 322 p.
        (FETUS—DISEASES)                    (MIRA 13:9)

GARMASHEVA, N.L.; KRYZHANOVSKAYA-KAPLUN, Ye.F.

Data on electrophysiological investigation of unconditioned reactions
typical for the period of pregnancy.  Fiziol. zhur. 46 no.12:1463-
1470 D '60.                                         (MIRA 14:1)

1. Laboratoriya normal'noy i patologicheskoy fiziologii Instituta
akusherstva i ginekologii AMN SSSR, Leningrad.
          (UTERUS—INNERVATION)          (PREGNANCY)

GARMASHEVA, N.L.

Problem of the interrelationship of the mother and fetus. Vest.
AMN SSSR 17 no.11:19-23 '62.                          (MIRA 16:1)

1. Institut akusherstva i ginekologii AMN SSSR, Leningrad.
                     (FETUS)   (PREGNANCY)

PETROV-MASLAKOV, Mikhail Andreyevich, prof , red.; GARMASHEVA,
Natal'ya Leonidovna, prof , red.; ALIFOV, V.I., red.

[Hypoxia of the fetus and the newborn; its pathogenesis
and diagnosis] Gipoksiia ploda i novorozhdennogo; pato-
genez i diagnostika. Leningrad, Meditsina, 1964. 150 p.
(MIRA 17:11)

1. Chlen-korrespondent AMN SSSR (for Petrov-Maslakov).

GARMASHEVA, Natal'ya Leonidovna, prof.; GRANAT, N.Ye., red.

[For the woman about the intrauterine development of the child] Zhenshchine o vnutriutrobnom razvitii rebenka. Moskva, Meditsina, 1965. 23 p.          (MIRA 19:1)

GARMASHOV V.

YEGUDIN, I.; GARMASHOV, V., starshiy nauchnyy sotrudnik; PANEVSKIY, N.,
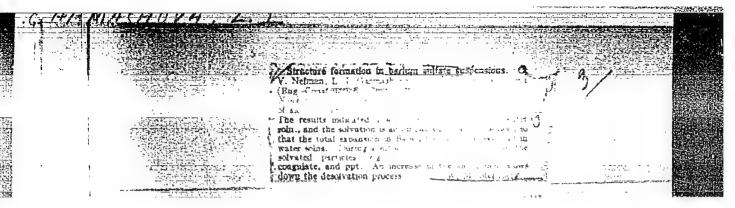starshiy ~~nauchnyy~~ sotrudnik.

Organization of feed supply in steppe regions. Zhivotnovodstvo 20
no.3:18-21 Mr '58.                                    (MIRA 11:2)
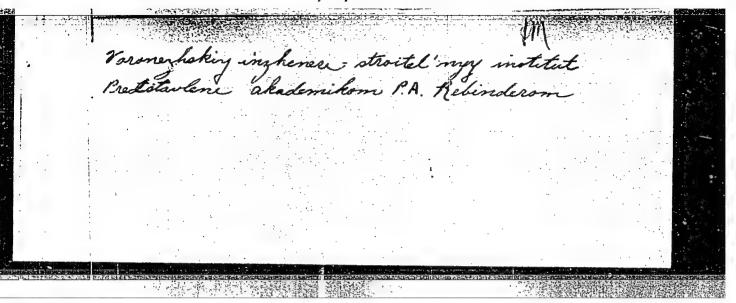
1. Predsedatel' kolkhoza "Druzhba narodov" (for Yegudin). 2. Krymskaya
sel'skokhozyaystvernaya opytnaya stantsiya (for Garmashov, Panevskiy).
             (Crimea--Feeding and feeding stuffs)

GARMASHOV, V., starshiy nauchnyy sotrudnik

Vicia pannonica in the Crimea. Zhivotnovodstvo 21 no.5:30-31
My '59.                                                (MIRA 12:7)

1. Krymskaya gosudarstvennaya sel'skokhozyaystvennaya opytnaya
stantsiya.
                    (Crimea--Vetch)

Structure formation in barium sulfate suspensions. Q
V. Nelman, L. I. ......
(Eng. ......) ...

The results indicated ... ...
soln., and the solvation is ... ...
that the total expansion in Ba ... ... in
water solns. During ... ... the
solvated particles ...
coagulate, and ppt. An increase in the ... ... down
down the desolvation process ... ...

Voronezhskiy inzhenerno-stroitel'nyy institut
Predstavlena akademikom P.A. Rebinderom

*GARMATA V.A.*

137-58-5-9368 D

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 5, p 80 (USSR)

AUTHOR:    Garmata, V.A.

TITLE:    Investigation of Electrode Processes in Electrolytic Refining of Aluminum (Issledovaniye elektrodnykh protsessov pri elektroliticheskom rafinirovanii alyuminiya)

ABSTRACT:    Bibliographic entry on the author's dissertation for the degree of Candidate of Technical Sciences, presented to the Mosk. in-t tsvetn. met. i zolota (Moscow Institute for Nonferrous Metals and Gold), Moscow, 1957.

ASSOCIATION:    Mosk. in-t tsvetn. met. i zolota (Moscow Institute for Nonferrous Metals and Gold), Moscow.

1. Aluminum--Purification    2. Electrodes (Electrolytic cell) --Performance

Card 1/1

AUTHORS: Garmata, V.A. and Belyayev, A. I.          136-9-10/14

TITLE:    Study of electrode processes in the electrolytic refining
          of aluminium. (Izucheniye elektrodnykh protsessov pri
          elektroliticheskom rafinirovanii alyuminiya).

PERIODICAL: Tsvetnyye Metally, 1957, No.9, pp. 58-66 (USSR).

ABSTRACT: The author describes and gives results of investigations
          of electrode processes during the electrolytic refining
          of aluminium by the three-layer method. ·The experiments
          were based on the study of polarization at the cathode and
          anode in relation to the current density, temperature,
          composition of the electrolyte, electrode material, nature
          of the ionic diffusion and other factors. Laboratory
          experiments for studying these factors were carried out in
          a special cell (Fig.1) and further laboratory work on the
          determination of the electrical-conductivity, density and
          liquidus temperatures of chloride-fluoride and fluoride
          electrolytes were made in a palladium cell. Back e.m.f. and.
          polarization of electrodes were studied on industrial cells,
          with oscillographic recording of current and voltage
          (Figs.7 and 10).  The authors conclude that in the
          electrolysis of chloride-fluoride ($60\%$ $BaCl_2$ + $23\%$ $AlF_3$ +.
          $17\%$ NaF) and fluoride ($48\%$ $AlF_3$ + $18\%$ NaF + $18\%$ $BaF_2$ +
Card 1/2  $16\%$ $CaF_2$) the primary process on the cathode is the

Study of electrode processes in the electrolytic refining of
aluminium.

discharge of aluminium ions and on the anode the electro-
chemical solution of aluminium. In the mixed electrolyte
polarization of -510, -605 and +220 mV correspond to the
start of discharge of barium, barium + sodium and chlorine
ions, respectively; in the fluoride electrolyte -575 and
+340 mV correspond to start of discharge of sodium and
fluorine, respectively. In commercial cells the mean
back e.m.f. was 370 mV, a figure which the authors
recommend for calculation purposes. As an additive they
recommend lithium fluoride (5-6% by weight) or 55% BaCl$_2$ +
35% AlF$_3$.1.5 NaF + 10% NaCl. The authors state that
the use of fluoride electrolyte for primary-aluminium
refining is unsuitable but can be recommended for secondary
metal containing magnesium.
The following assisted in the full-scale work: R. Ye. Vol'fson,
Ya. Sh. Katon and L. A. Daldovskiy.
Card 2/2  There are 12 figures, 1 table and 11 references -
7 Russian, 1 German, 1 Italian, 1 French, 1 English.

ASSOCIATION: Mintsvetmetzoloto.

AVAILABLE: Library of Congress.

1. Aluminum-Refining  2. Electrodes-Processes

GARMATA, V. A.

SOV/137-58-9-18739

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 9, p 84 (USSR)

AUTHORS:    Garmata, V.A., Belyayev, A.I.

TITLE:.    Investigation of Electrode Processes in Electrolytic Refining
of Aluminum (Issledovaniye elektrodnykh protsessov pri elek-
troliticheskom rafinirovanii alyuminiya)

PERIODICAL:    Sb. nauchn. tr. Mosk. in-t tsvetn. met. i zolota, 1957, Nr 27,
pp 193-214

ABSTRACT:    A study is made of the relationship of electrode potentials to
current density, temperature, and melt composition in the case
of a chloride-fluoride electrolyte (E) (60% $BaCl_2$, 23% $AlF_3$,
17% NaF) and a pure fluoride E (48% $AlF_3$, 18% NaF, 18%
$BaF_2$, 16% $CaF_2$). It is shown that the switching method of de-
termining potentials is not applicable to the study of this pro-
cess, in view of the comparatively small rate of increase in
electrode potentials, varying unevenly with c'd when the current
is turned on, and also in relation to the rate of drop in elec-
trode potentials which undergoes very great and uneven changes
Card 1/2    after disconnection of the polarizing current. The use of a

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Investigation of Electrode Processes in Electrolytic Refining of Aluminum

magneto-optical oscilloscope to investigate high-speed electrode processes is recommended. The cathodic and anodic current efficiency of either E is studied. It is found that the current efficiency is 3-4% higher with pure fluoride E, and therefore the latter is more desirable than the chloride-fluoride type. The conclusion is drawn that contamination of the cathode metal by Cu is attributable to the fact that the surface of the anode electrode becomes low in Al, and this creates conditions favorable to Cu going into the melt and being precipitated at the cathode. The study performed confirms the conclusion that the primary cathode process is the discharge of $Al^{3+}$ ions.

N.P.

1. Aluminum--Purification    2. Electrodes--Performance    3. Electrolytes--Properties
4. Electrolytes--Chemical reactions

Card 2/2

S/598/61/000/006/004/034
D245/D303

AUTHORS:     Lukashenko, E.Ye., Kramnik, V.Yu., Garmata V.A., and
             Sergiyenko, S.N.

TITLE:       Developing and introducing the method of titanium
             tetrachloride in retorts without inserting a reaction
             vessel

SOURCE:      Akademiya nauk SSSR. Institut metallurgii. Titan i
             yego splavy. no. 6, 1961. Metallotermiya i elektro-
             khimiya titana, 23 - 26

TEXT:   The authors carried out 38 experiments in which, for varying
conditions of feed rate, temperature, etc., magnesiothermal reduc-
tion of $TiCl_4$ in a single-zone reactor was compared with the same
process carried out using an inserted stainless steel reaction ves-
sel. The results show that the single-zone process utilized 50 -
60 % of the reactor volume as against 35 - 40 % for the other pro-
cess, that the cycle removal of Ti sponge increased by 50 - 60 %,
that labor productivity increased by about 30 % and that the quali-

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Developing and introducing the ...        S/598/61/000/00&/004/034
                                          D245/D303

ty of Ti sponge produced was not inferior to that produced by the
other method. There are 1 figure and 2 tables.

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S/136/62/000/001/005/005

E073/E335

18.8210   1454

AUTHORS:    Garmata, V.A., Fal'kevich, E.S., Arutyunov, E.A.
and Kulikov, V.A.

TITLE:    Influence of admixtures on the hardness of
commercially pure titanium and its relation to
other mechanical properties

PERIODICAL:    Tsvetnyye metally, no. 1, 1962, 80 - 83

TEXT:    The test results of over 2 500 specimens from various
batches of titanium sponge, produced under normal shop conditions,
were utilized for analyzing the relation between the hardness,
ultimate strength, elongation and contraction.  Furthermore, the
influence of admixtures contained in this sponge on the mechan-
ical properties of the ingots produced from it were studied.  A
correlation analysis was made on the basis of the results of
determination of the mechanical properties of samples from 300
different batches of titanium sponge.  The hardness was measured
on titanium ingots 60 mm dia. x 50 mm produced by vacuum electric-
arc smelting, using a consumable electrode.  The hardness was
measured in the as-cast state, using a 10-mm diameter steel ball

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Influence of admixtures on ....

S/136/62/000/001/005/005
E073/E335

with a pressure of 3000 kg. The correlation analysis for
determining the relation between the hardness of the Ti in the
as-cast state and the chemical composition was based on the
results obtained from specimens of 2 500 batches of Ti sponge,
in which the content of individual elements varied within very
narrow limits. On the basis of the obtained results, equations
were derived (which are given in the table) for inter-relating
the hardness with other properties. It was found that the
hardness could serve as a general criterion for determining
whether the Ti sponge was satisfactory with respect to mechanical
properties and chemical composition.
It is mentioned in an editorial note that this is one of the
first attempts to apply mathematical statistics in metallurgy.
There are 3 figures, 1 table and 7 references: 6 Soviet-bloc
and 1 non-Soviet-bloc. The English-language reference mentioned
is: Ref. 3L K. Teibor - Iron Steel Inst., 1932, 20, 140/146.

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S/136/62/000/001/005/005

Influence of admixtures on ....     E073/E335

Table:

| Function | Argument | Investigation limits | Correlation ratio | Correlation Coefficient | Eq. expressing linear relation |
|---|---|---|---|---|---|
| Ultimate strength, $\sigma_b$ | Hardness | 110-210 units $H_B$ | 0.9731 | 0.9662 | $\sigma_b = 0.311 \cdot H_B + 1.63$ |
| Elongation, $\delta$ | Hardness | 110-50 units $H_B$ | 0.8057 | -0.7879 | $\delta = -0.642 \cdot H_B + 123.51$ |
| Elongation, $\delta$ | Hardness | 150-210 units $H_B$ | 0.504 | -0.420 | $\delta = -0.076 \cdot H_B + 38.26$ |
| Contraction, $\Psi$ | Hardness | 110-170 units $H_B$ | 0.912 | -0.895 | $\Psi = -0.484 \cdot H_B + 138.4$ |
| Contraction, $\Psi$ | Hardness | 170-210 units $H_B$ | | | $\Psi = -0.25 \cdot H_B + 98.6$ |
| Hardness | Content $N_2$,% | 0.01-0.042 | 0.3711 | 0.3587 | $H_B = 609.5\%N_2 + 123.5$ |
| " | " $O_2$,% | 0.03-0.15% | 0.3091 | 0.2536 | $H_B = 119.9\%O_2 + 125.8$ |
| " | " $Fe$,% | 0.02-0.30% | 0.5972 | 0.5936 | $H_B = 164.5\%Fe + 123.6$ |

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Influence of admixtures on ....   S/136/62/000/001/005/005
E073/E335

Table (cont.)

** Since only a few Ti ingots with a hardness of
170 - 210 units $H_B$ were available, the correlation
analysis of the relation between hardness and contraction
was not carried out in this range;  this formula was
determined empirically.

X

Card 4/4

S/137/62/000/006/034/163
A006/A101

AUTHORS:     Lukashenko, E. Ye., Kramnik, V. Yu., Garmata, V. A., Sergiyenko, S.N.

TITLE:       Development and assimilation of magnesium-thermal reduction of titanium tetrachloride in retorts without an inserted reaction beaker

PERIODICAL:  Referativnyy zhurnal, Metallurgiya, no. 6, 1962, 14, abstract 6G100 (In collection: "Titan i yego splavy", no. 6, Moscow, AN SSSR, 1961, 23 - 25)

TEXT;      Industrial experiments of reducing and vacuum-separating $TiCl_4$ in retorts without beakers make it possible 1) to raise the coefficient of useful utilization of the reactor volume from 35 - 40 to 50 - 60%, and the cyclic yield of Ti-sponge by 50 - 60%;  2) to raise the hourly output of reduction and separation furnaces by 30 - 50%;  3) to raise the labor efficiency of the main production staff by 30% in this conversion department.  Moreover, apparatus without beakers assure the production of high-quality Ti-sponge.

[Abstracter's note:  Complete translation]                    G. Svodtseva

Card 1/1